

ICS 13.040.20
CCS Z 15

HJ

**INDUSTRY STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

HJ 604-2017

Replacing HJ 604-2011

**Ambient air - Determination of total hydrocarbons, total
methane and non-methane hydrocarbons - Direct injection / gas
chromatography**

环境空气 总烃、甲烷和非甲烷总烃的测定 直接进样-气相色谱法

(English Translation)

Issued on: December 14, 2017

Implemented on: March 1, 2018

Issued by: Ministry of Ecology and Environment

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i Foreword

In order to implement the Law of the People's Republic of China on Environmental Protection and the Law of the People's Republic of China on Prevention and Control of Atmospheric Pollution, Habitat to protect human health, regulate the total ambient air hydrocarbons, methane and non-methane total hydrocarbon determination, the development of this standard.

This standard specifies the direct injection of gas, methane and non-methane hydrocarbon determination of ambient air - gas chromatography.

This standard is the "total ambient air hydrocarbons Determination of gas chromatography" (HJ 604-2011) revision.

This standard was first published in 1994, the original standard (GB/T 15263-1994) drafting unit for environmental monitoring in Gansu Province Heart station, first revised in 2011. This is the second revision, the main contents of the revision are as follows.

- Expanded the determination of indicators, an increase of methane and non-methane total hydrocarbons, the corresponding revision of the standard name;
- Scope of application Increased measurement of total hydrocarbons, total methane and non-methane hydrocarbons in the air at monitoring points without organized discharges;
- revised the definition of total hydrocarbons and added the definition of non-methane total hydrocarbons;
- Increase the air bag as a sampling container, provides for sample collection, preservation methods and shelf life;
- Added quality assurance and quality control requirements;
- The appendix was deleted.

From the date of the implementation of this standard, "Determination of total hydrocarbons in ambient air by gas chromatography" (HJ 604-2011) abolished.

This standard by the Environmental Protection Department of Environmental Monitoring Division and Science and Technology Standards Division to develop.

This standard was drafted. Changzhou City Environmental Monitoring Center.

This standard verification unit. Jiangsu Province Environmental Monitoring Center, Suzhou City Environmental Monitoring Center Station, Suzhou Industrial Park Environmental Supervision Center Station, Taizhou City Environmental Monitoring Center Station, Nantong City Environmental Monitoring Center Station, Zhenjiang City Environmental Monitoring Center Station and Changzhou Wujin District Environmental Monitoring Station.

This standard MEP approved on December 14, 2017.

This standard since March 1, 2018 into effect.

This standard is interpreted by the MEP.

1 Ambient air Determination of total hydrocarbons, methane and non-methane hydrocarbons Direct injection - gas chromatography 1 scope of application this standard specifies the direct injection of gas, methane and non-methane hydrocarbon determination of ambient air - gas chromatography.

This standard applies to the determination of total hydrocarbons, methane and non-methane total hydrocarbons in ambient air, also applies to unorganized emission sources Air and air - Determination of total hydrocarbons, methane and non - methane hydrocarbons in monitoring air.

When the injection volume is 1.0 ml, the total hydrocarbons measured in this standard, the detection limit of methane are 0.06 mg/m³ (in terms of methane), the lower limit of determination was 0.24 mg/m³ (in terms of methane). The detection limit of total

non-methane hydrocarbons was 0.07 mg/m³ (measured by carbon) the lower limit is 0.28 mg/m³ (based on carbon).

2 Normative references this standard references the following documents or the terms. For undated references, the effective version applies to this book standard.

HJ 194 Manual Air Quality Monitoring Technical Specifications HJ 664 Technical Specifications for Ambient Air Quality Monitoring Sites (Trial Implementation) HJ 732 Fixed polluting sources - Volatile organic compounds - Sampling airbag method HJ/T 55 Guidelines for Unorganized Emissions Monitoring of Air Pollutants

3 Terms and definitions the following terms and definitions apply to this standard.

Total hydrocarbons total hydrocarbons (THC) Refers to the determination of the standard conditions, the gas chromatograph flame ionization detector has a response to the gas the sum of machine compounds.

Non-methane total hydrocarbons nonmethane hydrocarbons (NMHC) Refers to the total mercury content of other gaseous organic compounds after the methane is deducted from the total hydrocarbons Unless otherwise stated, the result is in terms of carbon).

4 method principle

Gas samples were injected directly into a gas chromatograph with a hydrogen flame ionization detector, respectively on a total hydrocarbon column and a methane column 2 set total hydrocarbons and methane content, the difference between the two non-methane total hydrocarbon content. In the meantime, the sample was replaced with hydrocarbon air to measure oxygen Response on Total Hydrocarbon Column to Deduce the interference of oxygen in the sample to total hydrocarbon determination.

5 Reagents and materials Unless otherwise specified, analytical grade analytical reagents and distilled water in accordance with national standards were used.

5.1 In addition to hydrocarbon air. total hydrocarbon content (oxygen peak) ≤ 0.40 mg/m³ (in terms of methane); or methane column determination, deoxygenation no other peak outside the peak.

5.2 Methane standard gas. 10.0 $\mu\text{mol/mol}$, equilibrium gas is nitrogen. Can also be based on actual work needs to qualified production Commercially agreed to the appropriate concentration of standard gas.

5.3 Nitrogen. Purity $\geq 99.999\%$.

5.4 Hydrogen. Purity $\geq 99.99\%$.

5.5 Air. purification tube purification.

5.6 standard gas diluent gas. high purity nitrogen or nitrogen in addition to hydrocarbons, purity $\geq 99.999\%$, according to the sample determination (8.3) step test Test, total

hydrocarbon determination results should be lower than the detection limit of this standard method.

6 instruments and equipment

6.1 Sampling containers. all-glass syringe, the volume of not less than 100 ml, after cleaning and drying spare; airbag material in line with HJ 732 of the relevant provisions of the volume of not less than 1 L, before use with hydrocarbon air (5.1) cleaning at least 3 times.

6.2 vacuum gas sampling box. the intake pipe, vacuum box, valves and suction pump and other components, the sample through the pipe material the quality should not react with the tested components.

6.3 Gas Chromatograph. Hydrogen flame ionization detector.

6.4 Injector. Injection valve with 1 ml dosing tube or 1 ml airtight glass syringe.

6.5 column

6.5.1 packed column. methane column, stainless steel or hard glass, 2 m x 4 mm, filled with particle size 180 ~ 250 μm (80-60 mesh) GDX-502 or GDX-104 support; total hydrocarbon column, stainless steel or hard glass, 2 m x 4 mm, Filled with silanized glass beads with particle size of 180-250 μm (80-60 mesh).

6.5.2 Capillary column. methane column, 30 m x 0.53 mm x 25 μm porous layer Open tube Molecular sieve column or other equivalent capillary Column; total hydrocarbon column, 30 m x 0.53 mm deactivated capillary air column.

6.6 General laboratory equipment and equipment.

7 samples

7.1 Sample Collection Ambient air Dispensing and sampling in accordance with the relevant provisions of HJ 194 and HJ 664; Source of pollution Unorganized discharge Monitoring point Air Place and sample according to HJ/T 55 or other relevant standards. Sampling vessels were sampled at least 3 times after air cleaning on site. To Glass syringes were used to collect air samples on full scale and sealed with inert sealing heads. Samples were taken with an air bag and sampled with a vacuum gas Tank (6.2) Introduce the air sample into the air bag to about 80% of the maximum volume and seal it immediately.

37.2 Transport blank

The sample container filled with hydrocarbon air (5.1) was taken to the sampling site and returned to the experiment together with the samples collected in the same batch Room analysis.

7.3 Sample Storage